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REQUEST FOR RECONSIDERATION

Sir:

The rejections of the pending claims as being anticipated by each of the Yoshida et al., Amorosi et al. and Cheng et al. patents were maintained. For the reasons presented in Applicants' prior response, and discussed further herein, it is respectfully submitted that these references do not anticipate, nor otherwise suggest, the subject matter of the pending claims.

In general, the claimed invention is directed to the orientation of the bond head transducer, relative to the X and Y translation axes for positioning the transducer and a

workpiece relative to one another, in a wire bonding apparatus. As recited in claim 1, for example, the X and Y axes define orthogonal directions along which the workpiece and transducer are moved relative to one another. See, for example, Figures 4 and 6 of the present application. The claim further recites that the bonding head transducer is maintained in a stationary orientation along a line dividing these X and Y axes. Thus, for example, as illustrated in Figures 4 and 6, the bonding head transducer 6 is oriented at an angle of 45° relative to the X and Y translation axes.

The rejections based upon each of the Yoshida et al. and Amorosi et al. patents focuses upon the fact that the workpiece can be rotated relative to the transducer about a Z axis. For example, the rejection based upon the Yoshida patent states:

"The bond head supporting means may be fixed in the x-y direction (movement in z direction and rotation only) with x-y movement or rotary movement of the workpiece...Note that the rotation is around the z-axis, at least one of the angular positions around the z axis (between 0 and 90 degrees) would be 45 degrees..."

A similar statement appears in the rejection based upon the Amorosi patent.

It is respectfully submitted that the fact that the workpiece is rotatable about a z axis has absolutely *no bearing* on the claimed subject matter, namely the orientation of the transducer relative to the X and Y axes of translation. To illustrate, claim 1 recites, among other elements, "means for causing relative movement of the workpiece and the transducer along an X axis." In the Yoshida patent, the X axis along which the workpiece moves relative to the transducer is identified in Figure 11, and is defined by movement of the x displacement table 67 along the shafts 68a and 68b (column 11, lines 25-30). Claim 1 also

recites "means for causing relative movement of the workpiece and the transducer along a Y axis orthogonal to said X axis." In the Yoshida patent, the Y axis is identified in Figure 9(b), and is defined by movement of the y displacement table 69 along the shafts 79a and 79b (see also Figures 11 and 12, as well as column 11, lines 48-52). Referring back to Figure 5, the x and y displacement tables are located immediately below the positioning unit 10, which supports the workpiece-holding jig 7. As can be seen, the X axis is oriented parallel to the plane of the paper, and the Y axis is perpendicular to the plane of the paper.

Claim 1 goes on to recite "means for maintaining the bonding head in a stationary orientation above the workpiece such that the longitudinal axis of said transducer remains fixed along a line dividing said X and Y axes..." In Figure 5 of the Yoshida patent, it can be seen that the longitudinal axis of the transducer 14, 15 is oriented in the plane of the paper. Hence, this longitudinal axis is parallel to the X axis rather than being along a line dividing the X and Y translational axes. The fact that the *workpiece* is rotatable about a Z (vertical) axis does not have any effect upon the orientation of the transducer relative to the X and Y translational axes. In other words, rotation of the workpiece does not change the position of the *transducer* relative to the *X and Y axes of movement*.

In responding to Applicants' prior arguments, the most recent Office Action states "the fixed transducer [of Yoshida] can remain at a 45-degree angle relative to the *x-y plane of the workpiece* when the workpiece is rotated" (emphasis added). However, the claim is not directed to the orientation of the transducer relative to the *workpiece*. Rather, the claim recites the relationship of the transducer relative to the *X and Y axes of movement*. The

Yoshida patent does not disclose that the transducer is oriented at an angle of 45° relative to these axes, as recited in subparagraph (e) of claim 1.

It is respectfully submitted that the rejection based upon the Yoshida patent does not identify how the Yoshida patent can be interpreted to anticipate the subject matter recited in the claims. As discussed above, the Yoshida patent only discloses that the transducer is oriented along the X axis of movement, rather than a line dividing the X and Y translational axes. If the rejection based upon the Yoshida reference is not withdrawn, the Examiner is requested to explain any errors in Applicants' foregoing analysis of that reference, relative to claim 1, as well as the manner in which the reference is being interpreted to anticipate the specific language of the *claims*.

Similar arguments apply with respect to the rejection based upon the Amorosi et al. patent. In particular, note Figure 4 of that patent, which explicitly discloses that the longitudinal axis of the transducer 81 is oriented along the X axis of movement, rather than a line dividing the X and Y axes. The fact that the workpiece 72 can be rotated about the Z axis does not have any effect upon the orientation of the transducer relative to the X and Y axes of movement.

The Cheng et al. patent discloses an arrangement in which the transducer is rotated about a vertical, or Z, axis. In contrast, claim 1 recites "means for maintaining the bonding head in a *stationary* orientation above the workpiece..." (emphasis added). For this reason alone, therefore, the Cheng et al. patent does not anticipate claim 1, nor any of its dependent claims.

Furthermore, the claim recites that the transducer "remains *fixed* along a line dividing said X and Y axes at all times during relative positioning of the workpiece and the transducer, for each wire bonding operation" (emphasis added). The rejection based upon the Cheng et al. patent states that the transducer axis "is moved into position which remains fixed while the bond head moves vertically to effect the bond..." However, claim 1 does not merely recite that the transducer is fixed during the bonding operation, *per se*. Rather, it states that the transducer remains fixed "at all times *during relative positioning of the workpiece and the transducer.*" By its very nature, the transducer of the Cheng et al. patent is not designed to remain in a fixed orientation during relative positioning of the workpiece and the transducer. Rather, the reason for making the transducer rotatable about a Z axis is to allow its orientation to be changed relative to the X and Y axes of movement during positioning. For this additional reason, therefore, the Cheng et al. patent does not anticipate the subject matter of claim 1, or its dependent claims.

If the rejection based upon the Cheng et al. patent is not withdrawn, the Examiner is requested to explain how that reference is being interpreted to disclose both a bonding head that is maintained in a *stationary* orientation above the workpiece, and also remains fixed along a line dividing the X and Y axes "at all times during relative positioning of the workpiece and the transducer." Without such an explanation, it is respectfully submitted that a proper showing of anticipation has not been made.

For the foregoing reasons, it is respectfully submitted that the pending claims are not anticipated by any of the three references upon which these claims have been rejected. Reconsideration and withdrawal of the rejections, and allowance of all pending claims, are therefore respectfully requested.

Respectfully submitted,

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